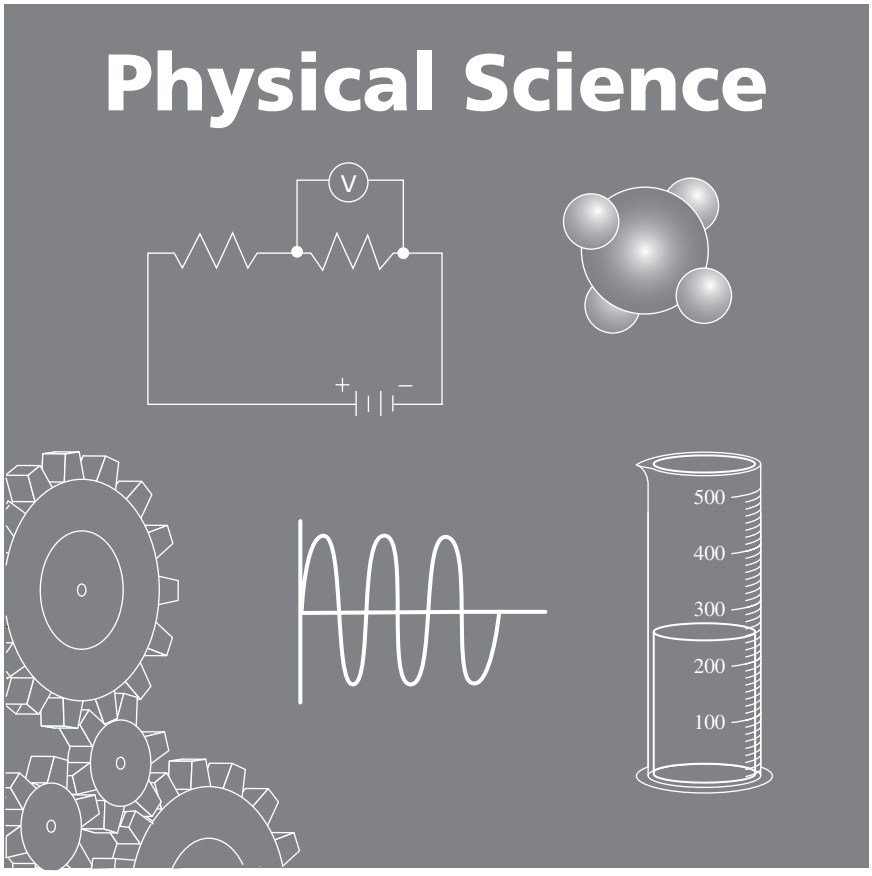
Preparing for the
Tennessee
End-of-Course Assessment



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Preparing for the End-of-Course Assessment Program

Physical Science

Introduction

What is happening?

A testing program entitled Tennessee End-of-Course Assessment Program has been established to meet the Tennessee mandate for end-of-course assessments in Tennessee secondary schools. The Tennessee State Department of Education is implementing this new system of assessment in several high school classes, starting with Physical Science in the 2003-2004 school year. The sample questions in this pamphlet are representative of the item types and item formats that will be used in the actual test.

What are the questions testing?

The questions assess the content standards covered by each course as described in the performance indicators developed by the Tennessee State Department of Education and listed on their website.

Who will be tested?

All students taking Physical Science will be tested. Tests may be given midyear for block schedules or at the end of the year.

How many questions are there?

Each test contains 60 multiple-choice questions.

How long will the tests take?

Students will have ample time to read and answer each of the questions. Each test will take approximately 90 minutes to complete.

How will the tests be scored?

The answers to the multiple-choice questions will be scored by machine. The test gives information about how well students understand the course content.

Can calculators be used?

Students may use their own calculators for the test. The use of calculators on these tests is optional. No questions on the test require a calculator. Sharing calculators during testing is not permitted. See the Test Administration Manual for guidelines on calculator use.

Can other materials be used?

A formula page and periodic table of the elements, similar to the ones included in this pamphlet, will be on pages 1 and 2 of the actual test.

How do I use these sample questions?

The questions in the pamphlet are a representative sample of the types of questions that will be in the Physical Science test. The questions are presented in a format similar to that which will be used in the actual test.

Reporting Categories have been provided for the questions in this pamphlet only. These Reporting Categories group the Physical Science Performance Indicators together. When students receive their reports from the test, these Reporting Categories will be used to report scores on student performance. The questions in the actual test will not have this identifying information, nor will they be ordered as shown in this pamphlet.

These questions can be used as a classroom learning session or as an individual, short practice test to prepare students for the actual test. Various item formats have been selected to better familiarize students with the actual test format.

An answer key for the sample questions is provided at the end of this pamphlet.

What tips are there for taking the test?

RELAX: It is normal to be somewhat nervous before the test. Remember that the score is only one of a number of measures of your performance.

LISTEN: Listen to and read the test directions carefully. Ask for an explanation of the directions if you do not understand them. Follow the directions.

PLAN YOUR TIME: Do not spend too much time on any one question. If a question seems to take too long, skip it and return to it later if you have extra time. First answer all the questions you are sure about.

THINK: If you are not sure how to answer a question, read it again and try your best to answer the question. Rule out answer choices that you know are incorrect and choose from those that remain.

Physical Science Formula Page

Velocity	$v = \frac{d}{t}$ WHERE v = velocity in meters per second (m/s) d = distance in meters (m) t = time in seconds (s)
Acceleration	$a = \frac{\Delta v}{t}$ WHERE a = acceleration in meters per second per second (m/s^2) Δv = change in velocity in meters per second (m/s) t = time in seconds (s)
Force	$F = ma$ WHERE F = force in newtons (N) m = mass in kilograms (kg) a = acceleration in meters per second per second (m/s^2)
Work	$W = Fd$ WHERE W = work in joules (J) F = force in newtons (N) d = distance in meters (m)
Power	$P = \frac{W}{t}$ WHERE P = power in watts (W) W = work in joules (J) t = time in seconds (s)
Density	$D = \frac{m}{V}$ WHERE D = density in grams per centimeter cubed (g/cm^3) or grams per milliliter (g/mL) m = mass in grams (g) V = volume in centimeter cubed (cm^3) or milliliters (mL)

Periodic Table of the Elements

1																	18
1 hydrogen **H** 1.01	2											13	14	15	16	17	2 helium **He** 4.003
3 lithium **Li** 6.941	4 beryllium **Be** 9.012											5 boron **B** 10.811	6 carbon **C** 12.011	7 nitrogen **N** 14.007	8 oxygen **O** 15.999	9 fluorine **F** 18.998	10 neon **Ne** 20.18
11 sodium **Na** 22.99	12 magnesium **Mg** 24.305	3	4	5	6	7	8	9	10	11	12	13 aluminum **Al** 26.982	14 silicon **Si** 28.086	15 phosphorus **P** 30.974	16 sulfur **S** 32.065	17 chlorine **Cl** 35.453	18 argon **Ar** 39.948
19 potassium **K** 39.098	20 calcium **Ca** 40.078	21 scandium **Sc** 44.956	22 titanium **Ti** 47.867	23 vanadium **V** 50.942	24 chromium **Cr** 52.01	25 manganese **Mn** 54.938	26 iron **Fe** 55.85	27 cobalt **Co** 58.933	28 nickel **Ni** 58.693	29 copper **Cu** 63.546	30 zinc **Zn** 65.38	31 gallium **Ga** 69.723	32 germanium **Ge** 72.64	33 arsenic **As** 74.922	34 selenium **Se** 78.96	35 bromine **Br** 79.904	36 krypton **Kr** 83.81
37 rubidium **Rb** 85.468	38 strontium **Sr** 87.62	39 yttrium **Y** 88.906	40 zirconium **Zr** 91.224	41 niobium **Nb** 92.906	42 molybdenum **Mo** 95.94	43 technetium **Tc** 97.9	44 ruthenium **Ru** 101.07	45 rhodium **Rh** 102.91	46 palladium **Pd** 106.42	47 silver **Ag** 107.87	48 cadmium **Cd** 112.41	49 indium **In** 114.82	50 tin **Sn** 118.71	51 antimony **Sb** 121.76	52 tellurium **Te** 127.61	53 iodine **I** 126.9	54 xenon **Xe** 131.291
55 cesium **Cs** 132.905	56 barium **Ba** 137.327	57 lanthanum **La** 138.91	72 hafnium **Hf** 178.49	73 tantalum **Ta** 180.95	74 tungsten **W** 183.85	75 rhenium **Re** 186.207	76 osmium **Os** 190.23	77 iridium **Ir** 192.22	78 platinum **Pt** 195.08	79 gold **Au** 196.97	80 mercury **Hg** 200.59	81 thallium **Tl** 204.38	82 lead **Pb** 207.2	83 bismuth **Bi** 208.98	84 polonium **Po** 209	85 astatine **At** 210	86 radon **Rn** 222
87 francium **Fr** 223	88 radium **Ra** 226	89 actinium **Ac** 227	104 rutherfordium **Rf** 261	105 dubnium **Db** 262	106 seaborgium **Sg** 266	107 bohrium **Bh** 264	108 hassium **Hs** 277	109 meitnerium **Mt** 268	110 ununnilium **Uun** 281	111 unununium **Uuu** 272	112 ununbium **Uub** 285						

58 cerium **Ce** 140.12	59 praseodymium **Pr** 140.91	60 neodymium **Nd** 144.24	61 promethium **Pm** 145	62 samarium **Sm** 150.36	63 europium **Eu** 151.97	64 gadolinium **Gd** 157.25	65 terbium **Tb** 158.93	66 dysprosium **Dy** 162.5	67 holmium **Ho** 164.93	68 erbium **Er** 167.26	69 thulium **Tm** 168.93	70 ytterbium **Yb** 173.04	71 lutetium **Lu** 174.97
90 thorium **Th** 232.04	91 protactinium **Pa** 231.04	92 uranium **U** 238.03	93 neptunium **Np** 237	94 plutonium **Pu** 244	95 americium **Am** 243	96 curium **Cm** 247	97 berkelium **Bk** 247	98 californium **Cf** 251	99 einsteinium **Es** 252	100 fermium **Fm** 257	101 mendelevium **Md** 258	102 nobelium **No** 259	103 lawrencium **Lr** 262

Numbers 1 and 2

1 **A net force of 30 newtons is applied to a 6-kilogram object. At what rate will the object accelerate?**

A 0.2 m/s^2
B 5.0 m/s^2
C 24 m/s^2
D 36 m/s^2

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2 **What force must be applied to an 8-kilogram bowling ball to accelerate it at a rate of 4 m/s^2 ?**

F 0.5 newton
G 2 newtons
H 12 newtons
J 32 newtons

Numbers 3 and 4

3 **If milk is not homogenized, the butterfat will separate and float to the top. This fact indicates that homogenization changes milk**

A from a colloid to a solution
B from a suspension to a colloid
C from a solution to a compound
D from a compound to an element

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4 **Look at the periodic table of the elements on page 4. In which part of the periodic table are nonmetals grouped?**

F the upper left
G the lower left
H the upper right
J the lower center

Numbers 5 and 6

5 **A strong acid reacts with a strong base to produce a salt and water, as shown below.**

$$HCl + NaOH \rightarrow NaCl + H_2O$$

What type of reaction is this?

A synthesis
B decomposition
C single replacement
D double replacement

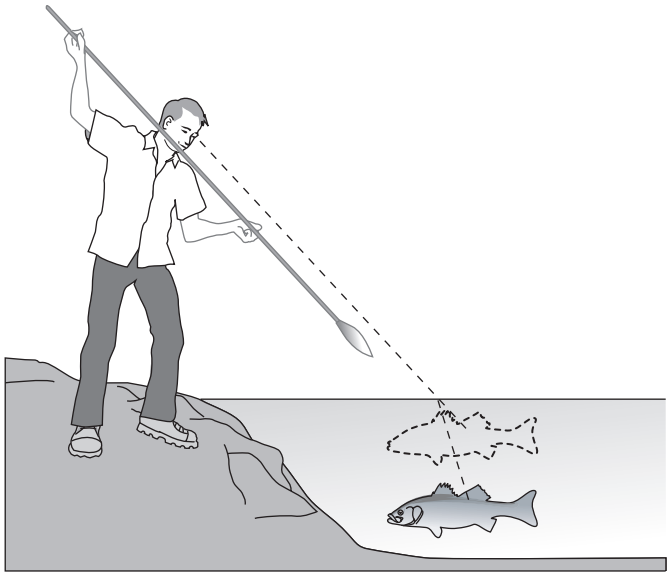
---

6 **What is the effect of acid rain on limestone buildings and monuments?**

F The limestone absorbs acid and turns to water.
G The limestone absorbs water and becomes soft.
H The acid causes the limestone surface to turn green.
J The acid reacts with the limestone and scars the surface.

Numbers 7 and 8

7 **The inexperienced spear fisher below is likely to miss the fish.**

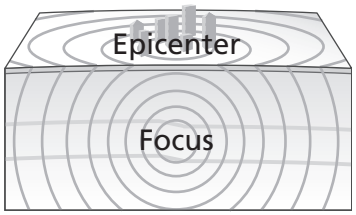


The wave phenomenon responsible for changing the path of light leaving the water is

A refraction
B reflection
C diffraction
D absorption

8 **Which of these diagrams illustrates a transverse wave?**

Earthquake

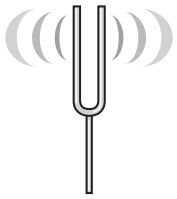


Particle movement ⟷ ⟷

Wave direction ⟵ ⟶

F

Tuning Fork



Particle movement ⟷ ⟷

Wave direction ⟵ ⟶

H

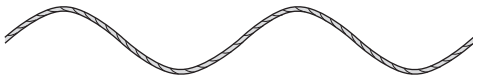
Coiled Spring

Particle movement ⟷

Wave direction ⟶

G

Rope



Particle movement ↕

Wave direction ⟵

J

Answer Key

Item Number	Correct Answer
1	B
2	J
3	B
4	H
5	D
6	J
7	A
8	J